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AN EMPIRICAL ANALYSIS OF AIR FORCE FOOD SERVICE MANAGEMENT WITH RECOMMENDATIONS

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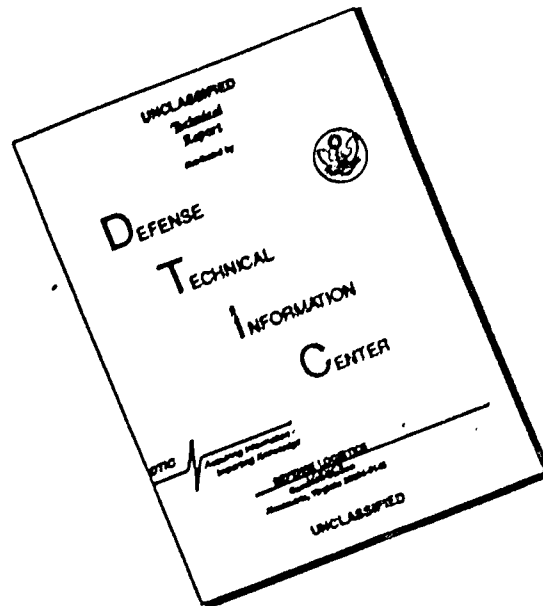
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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) A three-phase technical approach was planned to meet an Air Force requirement to improve food service management effectiveness; this report details Phase I during which an extensive analysis of Air Force food service management was accomplished and recommendations were made to improve management effectiveness. Inadequate training for managers was identified as a principal deficiency in management preparation; management assistance groups were found lacking; operational productivity was not assessed. Factors found to be highly associated with effective management were: customer satisfaction, building and facility		

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status, equipment status, food appearance, sanitation, and worker attitude. Recommendations to the Air Force were presented and approved to develop managerial effectiveness through a series of projects to be tested in an Air Force dining hall which is to be designated a model dining service facility. During Phase 2 of this program recommendations will be implemented; the emphasis during Phase 3 will be on program development and evaluation.

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Preface

The accomplishments in this report on Air Force food service were funded under the Air Force Requirement AF 82-5, Food Service Management of the DOD Food RDT&ENG Program, and were made possible by a successful team effort. Direction and coordination were provided by the Directorate of Systems Analysis and Concept Development (DSACD), and essential expertise and support were provided by the Behavioral Science Division of the Science and Advanced Technology Laboratory (SATL), both of the Natick Research and Development Center. Personnel from the Food Management Branch of the Housing and Services Division of the Air Force Engineering and Services Center (AFESC) at Tyndall Air Force Base, FL, also contributed significantly to the project. Further, Air Base personnel led by their various Major Command Headquarters cooperated completely with the R&D effort.

Indeed, Air Force personnel of the food service career field deserve the highest commendation for their professional approach to self-analysis and development. The cooks and supervisors with whom the project team worked personified the high personal and technical characteristics which engender enthusiasm and confidence. The food service group earned the respect and support of all who participated in this study.

Additionally, the authors recognize and are grateful for the valuable contributions to the project made by the following persons:

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AN EMPIRICAL ANALYSIS OF AIR FORCE FOOD SERVICE MANAGEMENT WITH RECOMMENDATIONS

Introduction

This report discusses the accomplishments and results of the effort under MSR AF 83-19, Air Force Food Service Management. The objective of this requirement was to analyze Air Force food service management and identify promising approaches to increase its effectiveness in appropriated-fund food service activities. To accomplish this objective, data were collected from personnel at the headquarters of the Major Commands of the Air Force, from training and management assistance personnel and from food service people and patrons at a selection of Air Force dining halls. These data were analyzed to identify problems in food service management and to describe factors associated with effective management. Additionally, the data provided an empirical base for the identification and justification of management improvement proposals. Subsequent phases of this project are planned to permit testing these proposals in operational settings.

Procedures

Data collection and analysis were accomplished in two separate yet related phases. During Phase I, data were collected from Air Force food service personnel to record and analyze their perceptions of the current status of food service management with a focus on existing problems and associated cause/effect factors. The following data collection procedures were accomplished:

1. Individual interviews with the Air Force Engineering and Services Center Headquarters Food Division personnel;
2. Individual interviews and surveys with Air Force Food Management Assistance Team (FMAT) members;
3. Reviews of records and reports by Management Evaluation Teams, FMATs, Hennessey Award Teams, and Inspectors General;
4. Individual interviews and surveys of 36 senior food service personnel at eight Major Command Headquarters;
5. Interviews and surveys with 45 base-level food service management personnel at eight Air Force installations;
6. Surveys of 52 cooks at six base dining facilities;
7. Workshops for senior base-level food service personnel were held in Japan for Pacific Air Force (PACAF) personnel and in Germany for United States Air Force in Europe (USAFE) personnel;

8. Workshop attendees were also interviewed individually and surveyed by questionnaires;

9. Instructor personnel and students were interviewed at the Lowry AFB School for Air Force food service personnel.

During Phase II, data were collected to describe further problem areas which surfaced during Phase I and to validate factors identified by food service specialists as associated with effective management of Air Force dining halls. Data collection procedures included the following.

1. The selection of air bases included a sample of bases considered by senior Air Force personnel and food service technical experts to be exceptionally well managed and a selected divergent group of installations where food service was considered in need of assistance. The two criteria groups were named the Hi Fliers (HF) (N=5) and the Lo Fliers (LF) (N=6), respectively. These two groups of bases were studied in depth in the interest of verifying the attributes of food service quality described by the Air Force.

2. Nine attributes were described and compared across bases and between criteria groups. These factors were:

- a. Building and physical facilities;
- b. Customer satisfaction;
- c. Food service equipment status;
- d. Food appearance;
- e. Food service productivity;
- f. Accounting and records;
- g. Sanitation of equipment, facility and workers;
- h. Training status of the workforce;
- i. Worker morale/attitude.

It was hypothesized that factors found to be relatively more favorable at the HF dining facilities vis a vis the LF dining facilities were indicators of effective management. When no discrimination was found between the HF and the LF facilities on a factor, the authors assumed that either the factor was invalid as an indicator or that it was improperly described due to problems with data collection.

Findings/Discussion: Phase I

1. Quality Food Service

Asked to rate food service quality on a scale of 1 (extremely poor) to 10 (the optimal level), Command Headquarters personnel, (N=36), reported a mean rating of 6.35, that is, between somewhat good and moderately good, with an intercommand variance of .6. Dining facility personnel, (N=45), ratings averaged 7.69, that is, between moderately good and very good. Interbase variance was .4.

Discussion

A comparison of the two groups' ratings is difficult since Headquarters ratings were Command-wide, rather than focused on a single base as was the case for dining facility personnel. Ratings do indicate, however, that senior food service personnel at the Headquarters level believe current food service quality is at least satisfactory. The most frequent verbal response to this item was "...good, but room for improvement." The discrepancy in rating averages between groups may indicate that those closest to the operation (dining facility personnel) accommodate their standards and, consequently, operation) more to existing realities than do those personnel removed from the day-to-day operation (Headquarters personnel) and its exigencies.

2. Food Service Management Problems

Specific problems identified by food service management are presented in Table 1.

Discussion

Inadequate training was the predominant problem identified by both respondent groups. Training deficiencies were cited by workers and management, including the food service officer. Manpower shortages were afforded high importance by command-level management and base-level senior personnel. The two management groups disagreed sharply on the status of food worker morale, management effectiveness, the image of the food service career field, and the status of food service equipment. Customer satisfaction is reported only once (in 81 interviews); cost effectiveness and system productivity were not mentioned, suggesting that neither was considered a management responsibility with attendant difficulty.

3. Problem Solutions

When asked to cite solutions most likely to reduce food service problems, interviewees responded as indicated in Tables 2 and 3.

Table 1. Problems in Food Service Management in Order of
Frequency Mentioned by Respondent Groups

Problems in Food Service Management	Command Hq. Personnel N=36			Base Level Personnel N=45		
	Frequency	Rank	%Reporting	Frequency	Rank	%Reporting
1. Inadequate Training	21	1	58%	39	1	87%
2. Poor Worker Morale/Attitude	9	2	25	1		2
3. Manpower Shortage	8	3	22	8	2.5	18
4. Incompetent Management	7	4	19	2		4
5. Poor Food Service Image	5		14	1		2
6. Equipment Maintenance	2		5	8	2.5	18
7. Contracts & Contracts Personnel	1			6	3	13
8. Worker Turnover	0			3	4	7
9. Facility Inadequacy	0			2		
10. Other Jobs Not Food Service	2			1		
11. Lack of Commander Support	2			2		
12. Nutrition	1			0		
13. Accounting & Controls	1			0		
14. Customer Satisfaction	1			0		

Table 2. Recommended Changes in Air Force-Wide and Command Level Policies and Practices

	Command HQ. Personnel N=36			Base Level Personnel N=45		
	Frequency	Rank	% Reporting	Frequency	Rank	% Reporting
Establish Job Performance Criteria Including Standards	7	1	19%	8	1	18%
Increase Manning Strength	6	2	17	5	3	11
Increase Formal Food Service School Training	4	3	11	7	2	16
Reduce Paperwork	1	4	3	4	4	9
More Assistance/Less Inspection	0	-	-	2	5	4

Table 3. Recommended Changes in Installation Policies and Practices

	Command HQ Personnel N=36			Base Level Personnel N=45		
	Frequencies	Rank	%Reporting	Frequencies	Rank	%Reporting
More Training at Base Level	18	1	50%	18	1	40%
Improved Food Service	3	2	8	1	3	2
Improve Civil Engineer Equipment Maintenance	0	-	--	5	2	11

Discussion

As seen in Tables 2 and 3, high agreement exists between the groups interviewed regarding recommended changes at the installation level. Highest priority is given the need for additional training, at the base level. Improved performance standards as a basis for worker/manager effectiveness evaluation and selection criteria were ranked first in Air Force-wide recommendations of both groups. The data also suggest that increases in the number and performance level of food service personnel are important needs recognized by food service people, with increasing performance effectiveness considered the more important of the two. In short, proper training and valid procedures for personnel evaluation and selection are perceived as preferred means to improve food service management.

4. Management Positions Needing Most Assistance

The respondents ranked four levels of food service management according to their perception of which level(s) needed most assistance in accomplishing their mission; the four levels were food service officer, superintendent, dining hall supervisor, and shift leader. Ranked results are displayed in Table 4.

Table 4. Food Service Management Positions Ranked on Need For Assistance by Two Samples of Food Service Personnel

Management Position Title	Command HQ Personnel N=36			Base Level Personnel N=45		
	Frequency	Rank	% Reporting	Frequency	Rank	% Reporting
Shift Leader	15	1	41%	26	1	57%
Food Service Officer	11	2	31	3	3.5	7
Dining Hall Supervisor	6	3	17	8	2	18
Food Service Superintendent	3	4	8	3	3.5	7

Discussion

Shift leaders are the most needful of assistance compared with other food service managers. Food service officers also need considerable assistance in the view of the Command HQ personnel but are not similarly viewed by the Base Level group. Ranking with respect to assistance needed, when done by those base-level personnel most directly responsible for dining hall operations, appears to vary with degree of interface with the workforce, that is, the shift leader is highest and the food service officer lowest (actually tied in ranking with the superintendent). These findings suggest that management is perceived as most challenging where interaction frequency with workers is highest.

5. Management Personnel Selection

Opinions were solicited on current AF practices in the selection and preparation of individuals to manage food service operations. Both strengths and weaknesses of the practices were identified as indicated below.

- o Strong Point - Formal schooling was the only point mentioned by more than one respondent (36 of 81 persons said schooling was good).

Single, individual favorable responses mentioned included on-job-training (OJT), correspondence courses, and promotion from within. Thirty percent of the HQ respondents and 60% of the base-level respondents did not identify any strong points in AF management preparation.

- o Weak points - inadequate school training for managers was mentioned by 15 interviewees,

Inadequate OJT was mentioned by 7 interviewees,

Poor manager selection was mentioned only by HQ personnel.

Inadequate formal (long) training was mentioned by 7 managers.

Insufficient job rotation was mentioned only by HQ personnel.

Discussion

The criteria groups interviewed agreed that more training is needed for managers, although, base-level managers did not agree with HQ personnel that managers are improperly selected or that they need more job rotation. On the other hand, the responses of the two groups both strongly implied that the Air Force is not adequately preparing its food service personnel for management responsibility.

6. Base Commander Support

Interviewees were asked to rate the level of interest in and support for food service programs evidenced by base commanders. A scale of 1 to 10 was used in the rating procedure. The average rating by HQ personnel was 6, moderately interested, with a range of 4, little interested to 8, very interested. Base-level respondents gave a mean rating of 5, slightly interested, with a range from 0, no interest, to 10, extremely interested.

Discussion

These data support the conventional view that assessment and improvement of commander support must necessarily be accomplished through an individual base-by-base approach. However, it is significant to note that some senior food service personnel perceive their commanders as having little or no interest in the food service operation.

7. Training for Managers

Types of training for managers were suggested by the interviewees. Their recommendations are displayed in Table 5 below.

Table 5. Type Training Preferred for Food Service Managers
Indicated by Two Groups of Food Service Personnel

Type Training	Command HQ Personnel N=36	Base Level Personnel N=45
	% Responding	% Responding
Communications and Human Relations	8%	31%
Accounting, Records, Cost Control	14	13
Private Industry Restaurant Management	11	0
Culinary Arts	8	7
Contracting	3	7

Discussion

Agreement between HQ and base personnel exists relative to the need for training in bookkeeping matters. By contrast, only base-level people seem to recognize a need to improve communications and human relations skills within the food service was not of apparent interest to base-level managers.

8. Management Assistance

The interviewees were asked to rate the relative value of staff groups in assisting in management development. Rankings are displayed in Table 6.

Table 6. Ratings of Management Assistance Groups
by Two Groups of Food Service Personnel

	<u>Group Rated Most Helpful By</u>	
	<u>Command HQ Personnel</u>	<u>Base Level Personnel</u>
	<u>N=36</u> <u>% Responding</u>	<u>N=45</u> <u>% Responding</u>
FMAT	32%	23%
CESMET	13	28
AFESC	9	15
Other	0	0
None Rated as Most Helpful	45	31

Discussion

A lack of consensus as to which agency might be most effective in management development is apparent from these findings. Large percentages of respondents in both groups failed to report any agency as best able to promote management, even though the ratings were presented as relative (to each other) and not as absolutes.

9. Effective Management Indicators

Interviewees were asked to identify what they would look for as indicators of a well-managed dining facility. Their responses to an open-ended question on the subject are rank ordered as indicated in Table 7; their responses to a questionnaire on which the managers rated the relative importance of a selected list of management indicators (Figure 1) are reported in Table 8.

Table 7. Factors Related to Effective Dining Facility Management

Factor	Command HQ Personnel N=86		Base Level Personnel N=45	
	Frequency Mentioned	Rank	Frequency Mentioned	Rank
Worker Attitude	22	1	19	2
Food Quality	16	2	17	3
Sanitation	15	3	28	1
Customer Satisfaction	14	4	12	5
Manager Attitude	12	5	11	6
Serving Line	6	6	13	4
Records	5	7	10	7
Facility Decor	4	8.5	7	8
Food Quantity	4	8.5	5	10
Training	3	10	4	11
Equipment Status	1	11	6	9

Please check one ☐ HQ
 ☐ Food Service Officer
 ☐ Food Service Superintendent
 ☐ Dining Hall Supervisor
 ☐ Cook

Please tell us how important you think each factor listed below is to effective food service management. Rate each factor as follows:

- 4. Extremely important
- 3. Very important
- 2. Moderately important
- 1. Slightly important
- 0. Not important

Please write in the appropriate number next to each factor.

- ☐ 1. Planning meetings which include the food service workforce.
- ☐ 2. On-the-job training being provided for cooks.
- ☐ 3. School training in food service being provided for cooks.
- ☐ 4. Management training for the dining hall supervisor.
- ☐ 5. Management training for the food service superintendent.
- ☐ 6. Food service training for the food service officer.
- ☐ 7. Providing recognition to the cooks for work well done.
- ☐ 8. Managers getting recognition for work well done.
- ☐ 9. Communication between managers/supervisors and the workforce.
- ☐ 10. A preventive maintenance program for all food service equipment.
- ☐ 11. A self-inspection/evaluation program for food service managers and supervisors.
- ☐ 12. Work assignments that rotate workers among food service tasks.
- ☐ 13. Customers-food service personnel relations.
- ☐ 14. Accurate and timely submission of reports.
- ☐ 15. Customer satisfaction.

Please Turn Page

Figure 1. A Questionnaire on Effective Management
for Food Service Workers

- ___ 16. Managers knowing how to correctly prepare financial reports.
- ___ 17. Having a dining facility with attractive decor (that looks nice).
- ___ 18. Managers knowing how to operate all equipment in the dining facility.
- ___ 19. Managers pointing out mistakes to the cooks.
- ___ 20. Managers helping workers under him with personal problems.
- ___ 21. Managers knowing a lot about food service.
- ___ 22. Managers emphasizing portion control.
- ___ 23. Managers enforcing progressive cookery.
- ___ 24. A sanitary, clean dining facility and kitchen.
- ___ 25. Clearly defining the job each worker is to do.
- ___ 26. Managers having higher rank than everyone who works for him.
- 27. Please write in any factors that you think are very important in effective food service management.

Figure 1. (Continued)

**Table 8. Factors Important to Effective Management as Rated
by Five Groups***

Rated By	Factors of Lower Importance	Lowest Factor	Factors of Higher Importance	Highest Factor
MAJCOM HQ N=30	11,14,26	14	2,4,7,9,15	9
Food Service Officers N=9	11,19,26	26	2,9,15,25	9
Food Service Superintendents N=20	26	26	2,4,9	2 & 9
Dining Hall Supervisors N=31	26	26	2,7,9,15,21,24	9
Cooks N=50	1,11,13,14,26	26	9,24	9
Total Sample N=140	11,14,26	26	9,15,24	9

* Factors are represented in this table by their questionnaire number; see Figure 1 for item description.

Discussion

General agreement exists between HQ and base personnel on indexes of well-managed dining operations: for example the highest and lowest three factors are the same for both groups.

- o Sanitation was the strongest factor mentioned. Fifty-three percent of all respondents ranked this factor in the top 3 of 11 factors in all. Dining facility personnel were most cognizant of sanitation, as 62% indicated it was most important; 41% of HQ people interviewed said likewise.
- o Training and equipment status, factors frequently mentioned as problem areas by food service personnel (see also Tables 2 and 3 above), were given very low importance by HQ and dining facility personnel as indicators of effective management.
- o Customer satisfaction, often identified as the "bottom line" in food service, was ranked only 4th and 5th of the 11 factors mentioned by the HQ and dining facility people, respectively.
- o Productivity and cost control were not mentioned as indicators of management effectiveness by any of the 76 respondents, facts that should be noted.

Responses to the management effectiveness questionnaire (Figure 1) also indicated general agreement among food service groups on relative importance of factors associated with effective management (see Table 8). For example, all groups cited "communication between managers and the workforce" as the factor of relatively greatest importance to effective management, although superintendents reported "OJT for cooks" equal to communication in importance. Also all groups rated "rank of the manager," as relatively unimportant although the base-level group ranked it lowest.

Cooks and superintendents did not rate customer satisfaction as highly related with effective management. However, HQ personnel, food service officers, and dining hall supervisors rated it in the high-importance category.

Superintendents and supervisors rated "accurate and timely submission of reports" as highly related to effective management. By contrast, HQ personnel, food service officers and cooks rated the factor as a minor indicator of effective management.

10. Motivational Factors

The managers responded to a questionnaire on which they were asked to rate a list of factors as effective motivators of the workforce. The questionnaire is included here as Figure No. 2; the factor ratings are displayed in Table 9.

Please check one _____ HQ
 _____ Food Service Officer
 _____ Food Service Superintendent
 _____ Dining Hall Supervisor
 _____ Cook

If we agree that only a well-motivated workforce is productive, it is important for managers to know what will motivate food service workers. Please tell us what you think will motivate workers by rating each factor below as follows:

- 4. Extremely effective motivator
- 3. Very effective motivator
- 2. Moderately effective motivator
- 1. Slightly effective motivator
- 0. Not an effective motivator

Please write in the appropriate number next to each factor.

- _____ 1. Recognition for good performance on the job, such as: airman of the month, picture on the bulletin board, name mentioned in written newsletter, etc.
- _____ 2. Awards for good performance on the job; such as 3 day passes, tickets to events, cash, restaurant tickets.
- _____ 3. Written commendation from supervisor.
- _____ 4. Words of appreciation from supervisor/superintendent.
- _____ 5. Managers checking up on cooks to make sure they do things correctly.
- _____ 6. Feedback from customers that service is appreciated.
- _____ 7. Being included in planning and evaluating the food service operation.
- _____ 8. Manager conducting daily inspections of cooks.
- _____ 9. Allowing flexible work hours.
- _____ 10. Manager taking good suggestions from the cooks seriously.
- _____ 11. Having the dining facility be in the running for the Hennessey award.
- _____ 12. Short term (2,3, or 4 weeks) OJT in a good, high-quality civilian restaurant.

Please Turn Page

Figure 2. A Questionnaire on Motivational Factors of Food Service Workers

___ 13. The Air Force providing time and paying for courses toward a food service degree in a college or community college program (i.e., Johnson & Wales).

___ 14. The chance to obtain food service certification in preparation for later civilian employment.

___ 15. Taking names and kicking [___].

16. Do you believe that allowing food service people to eat with no charge (free) would encourage them to stay in the food service career field?

___ YES

___ NO

___ UNCERTAIN

Please explain your answer -

17. Please write in any other things you can think of that might be good motivators for food service workers (cooks).

Figure 2. (Continued)

Table 9. Factors with High and Low Motivational Value
as Rated by Five Groups*

Rated By	Low Motivators	Lowest	High Motivators	Highest
MAJCOM HQ N=30	5,8,9,15,16	15	2,4,6,10,13	10
Food Service Officers N=9	5,8,15,16	15	2,6,10,11,12,13,14	14
Food Service Superintendents N=24	5,8,9,15,16	15	1,7,10,13	10
Dining Hall Supervisors N=29	5,8,9,15,16	15	1,2,6,10,12,13,14	10
Cooks N=S2	5,8,12,15,16	15	2,3,4,10	10
Total Sample	5,8,9,15,16	15	2,4,6,10,13	10

*Factors are represented in this table by their questionnaire item number. See Figure 2 for item description.

Discussion

The data in Table 9 suggest agreement among food service personnel that a highly authoritarian approach to managing the workforce is not an effective motivational style in the food service career field. Items such as "Managers conducting daily inspection of cooks," and Managers checking up on cooks to make sure they do things correctly," which suggest an inspectorial type management, were rated low. Item 16 "Food service people eating meals without charge" was also viewed as a relatively low motivator.

Nearly total agreement among groups was seen regarding the most effective motivator. With the exception of the Food Service Officer group, all respondents identified "Manager taking good suggestions from the cooks seriously" as the most effective work motivator of the 16 factors listed. Food service officers alone identified the highest motivator as "The chance to obtain food service certification in preparation for later civilian employment."

Two other exceptions to consensual agreement were that cooks identified OJT in a high quality civilian restaurant as a low motivator, whereas the manager group viewed this experience as a high motivator, and 2) only food service officers rated the Hennessey Award competition as a high motivator.

11. Formal Instruction at Lowry AFB Food Service School

Instructors and students were interviewed at the Lowry AFB Food Service School. The authors hoped to survey a sample of students, however, the director of the school refused permission to survey students.

Ten military instructors were interviewed to learn their perspective on factors inherent in effective food service management and operations. Their responses generally coincided with those of headquarters food service personnel. When asked to comment on training at the Lowry School and training in general for food service, the instructors responses were:

- o Training records at base level were frequently "pencil whipped" and were unreliable as indicators of workforce capability;
- o Instructors and trainers were selected by invalid criteria resulting in generally poor instructions;
- o Food service superintendents were selected from other career fields much to the detriment of the food service career field and quality food service.

Students at Lowry are provided hands-on cooking experience with civilian cooks. Frequently, these contract civilians follow practices inimical to objectives and standards of Air Force food service. Instructors feel strongly that civilian contractors should be replaced by military personnel.

Twenty students attending a middle-level management course were interviewed. Their reactions to the course were generally favorable, however, only two of those interviewed were anticipating immediate post-course assignments where their recently attained learning could have application.

Fifty-three students in the basic food service course were queried regarding their perception of the food service career field and how they entered it. A breakdown of career field choices of the students was:

- 30% chose food service as a high option career field;
- 15% chose food service as a low option career field;
- 55% did not choose food service as a career field.

More than 50% of the 53 students indicated they had received overseas assignments.

12. Overseas Management Problems

It was hypothesized that the improvement of food service management at overseas bases might present problems that differed in some measure from those encountered at Continental United States (CONUS) bases. Consequently two workshops were arranged for food service managers overseas - one at Yokota Air Force Base in Japan for PACAF, and one at Ramstein Air Force Base, West Germany for USAF.

The PACAF workshop was held January 25 and 26, 1982. Fifteen food service managers came from five countries. The data reported here were obtained from a questionnaire sent to the managers in advance and brought to the workshop with them and from discussions which took place at the workshop itself. Many of the problems discussed were the same as those identified in the survey of food services in this country. This report will concentrate on matters of concern which differ from those already described - either special problems or common problems that require special efforts to deal with in an overseas setting.

Pacific Area

The most significant problem for food service management in PACAF was identified as that growing out of the long supply lines. Food and materials were often delayed in coming and failed to arrive in edible condition. This was not a matter with which the workshop participants felt food service management could effectively deal, but 93% (14 out of 15), nonetheless, expressed concern about this subject.

Nine of the 15 participants identified as a significant matter the fact that they were functioning in a foreign culture. They expressed the conviction that language training would be very useful and greater knowledge of the customs of the country would help them in working with the local citizens who were employed to help with the food service. Language training would also help with local procurement.

In this regard participants suggested that consideration be given to longer overseas tours. Under existing circumstances, food service management personnel are reassigned about the time that they become familiar with the overseas situation and able to function at maximum effectiveness within it. A longer tour of duty, however, would add seriously to morale problems unless it was combined with more frequent stateside leave (such as every six months or so as private industry often does).

Half of the participants (8 out of 15) cited inexperienced and inadequately trained personnel as a serious problem for overseas food service management. While similar concern was expressed in a stateside survey, the solutions in the overseas setting are somewhat different and certainly more difficult to deal with. Formal training is less accessible from the overseas base and is virtually inaccessible to foreign nationals. The distances involved and the local nature of some of the management problems suggested to the participating managers that a training program in PACAF would be beneficial. Case studies could be developed and a mobile video training program could be devised. Given the distances and also the current unavailability of formal training programs, the workshop emphasized the special importance of OJT and apprenticeships for those who will be stepping into positions of greater management responsibility. While these are important everywhere, they are of greater potential value to food service management at overseas bases. It was clear from the survey of stateside bases that both formal training and OJT are perceived by food service personnel as requiring additional manning. This requirement for added manning was seen by overseas managers to be even more critical.

European Theater

Ten food service managers attended the USAFE workshop on March 17-18, 1982. They were unanimous in identifying manning problems as serious in the European theater. Nine of the 10 cited training as a serious problem, 8 called attention to support as a matter of great concern and 7 mentioned morale.

Actually, half of the participants in PACAF referred to morale as a problem, and in the CONUS survey morale concerns were also clearly stated. But in USAFE workshop questions of manning, training, and support often had a significant morale component.

For example, the managers called for 100% manning as the wartime mission requires, and they emphasized the cost of undermanning in terms of inability to attend formal training or to present the most effective OJT program - especially of the highly desired "hands on" type. The low level of manning was seen as a major factor in the obstruction to planning and coordination since personnel were constantly involved in "putting out fires." If the manning were to continue at its present level, the group expressed the opinion that it was very important for the food service managers to obtain their necessary training in the United States before their overseas assignments. It could also help if an E-8 or E-9 position could be substituted for the food service officer on the manning document.

There are various specific suggestions for improvement of morale, such as providing opportunities for food service personnel to attend culinary arts schools or to participate in competitions in the culinary arts, and through the establishment of food service improvement committees. An even more important suggestion made was that the upper levels of the Air Force or the overseas base agencies, such as civil engineer, give more attention to food service and a higher priority to food service needs and equipment in the European area. The managers at the workshop emphasized the morale problem growing out of the long hours required of food service personnel and the absence of opportunities for them to have holidays off. They recommended that, because of this, food service people be exempted from special details and that they be given compensatory time where overtime hours had been required.

Findings/Discussion: Phase II

Management effectiveness factors identified in Part I of the study were described at each base to the two sample populations, Lo Flier/Hi Flier. The matrix displayed in Table 10 shows the relative strength of each factor for the two criteria groups (Lo Flier/Hi Flier) and for each base in both groups. It is clear, that based upon relative rankings, the Hi Flier Group - the group of bases where the better managed dining operations were believed to be - did outperform the Lo Flier group. On every factor studied, the Hi Flier group outranked the Lo Flier bases. On several factors the superior status of the Hi Flier group was very strongly indicated, for example on customer satisfaction, building and facility status, and sanitation. In other comparisons, the intergroup differences were weaker, for example productivity and training status. The following individual factor analyses provide additional comparisons of well and poorly managed food service operations.*

This analysis did not propose to make comparisons between individual bases, or to single out a particular base for comment. However, it is instructive to note the ranking of the one full service civilian contract dining facility in the sample. The food service operation at base No. 6 was ranked the highest of all bases in both groups; its absolute level of operation is no doubt even higher than the data indicated.**

* It is to be noted that rank difference and other statistical inferences derived in this analysis were not tested for statistical significance.

** Base No. 6 ranked 11th of 11 bases in the productivity area, however, the productivity data were reported by the civilian contract representative and reflect the worker-hours of labor stated in the contract - not actual hours used - as was the case in the military operations. Civilian contractors are not required to report the actual worker-hours of labor used in the contracted operation.

Table 10. A Comparison by Rank Value of Two Groups of Air Force Bases on a Criteria of Management Effectiveness Factors

		Hi Fliers					Group Means		Lo Fliers					
		4	6	7	8	14	\bar{X}_H	\bar{X}_L	2	3	5	9	10	13
BASE NUMBERS		4	6	7	8	14			2	3	5	9	10	13
FACTORS														
Buildings/Facilities		8	9	10	11	6	8.8	3.7	5	7	1	2	3	4
Customer Satisfaction		8	11	10	6	9	8.8	3.7	1	4	7	5	2	3
Equipment Status		9	11	7	8	2	7.4	4.83	3	6	5	10	4	1
Food Appearance		11	7	9.5	9.5	5	8.4	4	1.5	4	6	8	1.5	3
Productivity		7	1	11	9	4	6.4	5.6	3	10	2	8	5	6
Records		9	10	3	5	11	7.6	4.6	1	4	6	8	7	2
Sanitation		10	11	8	9	7	9	3.5	1	4	2	6	3	5
Training Status		6.5	—	8	6.5	2	5.75	4.4	—	5	9	3	1	4
Worker Attitude		7.5	11	7.5	3	10	7.8	4.8	4	1.5	5	8	1.5	9
Overall Means (Unweighted)		6.7	9	8.2	7.4	6.5	7.8	4.4	3.38	5.22	4.77	5.55	3.22	4.11

* The matrix numbers were derived by rank ordering the bases on each factor and assigning a value to each base reflecting its position in the rankings. Thus the base ranked highest received a rank value of 11, the lowest base a rank value of 1, etc.

** Bases Nos. 2 and 6 did not make worker training data available to the investigation.

Military food service managers may very well profit from an examination of the food service operation at Base No. 6; its high quality service is evidence that with optimum procedures and equipment, management effectiveness can be enhanced and operational excellence is the end product.

1. Building/Facilities

The physical aspects of the dining facilities were rated using a modified form of the Evaluation and Standards form distributed by the Air Force Engineering and Services Center (AFESC) via Food Service Letter 81-8, 24 Sep 1981 (see Appendix A).

On an overall basis, only two bases met or exceeded Air Force standards as described in the AFESC document. However, with one exception, Base No. 5 at 66% of standard,* all bases were above substandard with the lowest in this group achieving 84% of Air Force standards.

Given the above findings, it is possible to say that the best-managed dining facilities are more attractive and functional than the less-well managed facilities, though the differences are not great. Further, all dining operations housed in permanent quarters approached Air Force standards. In sum, these data indicate that in the area of buildings and facilities, Air Force food service management has done well.

2. Customer Satisfaction

Patrons at the dining halls surveyed rated specific meals and the overall dining facility. Ratings were obtained on hedonic scales where 1 indicated extreme dissatisfaction and where the highest score, either 7 (Figure 3) or 9 (Figure 4) depending upon the factor rated, indicated extreme satisfaction.

When the bases were ranked on the criteria of meal and overall food service satisfaction, the Hi Flier group outperformed the Lo Flier group by a wide margin (Table 10). The relative positioning of the two groups suggests that patrons in the Lo Flier group rated their food service as unsatisfactory. However, when the actual rating scores were examined, revealing the absolute rather than the relative customer satisfaction levels, it was apparent that even in the lowest rated dining facility the mean customer rating was neutral to slightly positive (see Table 11).

A valid inference can be made from these data that effective management and customer satisfaction are related in a positive manner. Consequently, it can be reasoned that improved food service and customer satisfaction should be obtained (at bases with lower hedonic ratings) when management effectiveness improves.

* The dining operation at this base was housed in temporary facilities.

Please help us assist the USAF Food Service Office in evaluating Air Force dining facilities by answering the following questions about YOUR dining facility.

1. For each part of this question, please circle the number that best describes your opinion of this dining facility.

	VERY BAD	MODER- ATELY BAD	SOME- WHAT BAD	NEITHER BAD NOR GOOD	SOME- WHAT GOOD	MODER- ATELY GOOD	VERY GOOD
a. Hours of Operation	1	2	3	4	5	6	7
b. Quality of the Food	1	2	3	4	5	6	7
c. Amount of Food	1	2	3	4	5	6	7
d. Variety of food at a single meal	1	2	3	4	5	6	7
e. Variety of the menu over the last two weeks	1	2	3	4	5	6	7
f. Temperature of the food	1	2	3	4	5	6	7
g. Speed of Service	1	2	3	4	5	6	7
h. Cleanliness of the dining facility	1	2	3	4	5	6	7
i. Courtesy of food service workers	1	2	3	4	5	6	7
j. Appearance of the serving line	1	2	3	4	5	6	7
k. Cleanliness of food service workers	1	2	3	4	5	6	7
l. Appearance of the dining area (decor)	1	2	3	4	5	6	7
m. Lighting	1	2	3	4	5	6	7
n. Background music (if none, don't answer)	1	2	3	4	5	6	7
i The dining facility <u>OVERALL</u>	1	2	3	4	5	6	7

How often is your dining area: (Please circle one number for each of the following)

	ALMOST NEVER	SOME- TIMES	OFTEN	ALMOST ALWAYS
a. Too noisy	1	2	3	4
b. Too crowded	1	2	3	4
c. Too hot	1	2	3	4
d. Too cold	1	2	3	4

Please feel free to write any comments you might like to make about this dining facility on the other side of this form.

Figure 3. Food Service Customer Survey Form

We would like your opinion of the meal you have just eaten.

Please circle the number next to the words which best describe how much you liked or disliked the MEAL OVERALL.

- | | |
|---|--------------------------|
| 9 | Like Extremely |
| 8 | Like Very Much |
| 7 | Like Moderately |
| 6 | Like Slightly |
| 5 | Neither Like Nor Dislike |
| 4 | Dislike Slightly |
| 3 | Dislike Moderately |
| 2 | Dislike Very Much |
| 1 | Dislike Extremely |

Table 11. Mean Hedonic Scores on Customer Satisfaction for
Two Groups of Air Force Bases

Base No.	Hi Flier		N	Base No.	Lo Flier		N
	Mean	Hedonic Score			Mean	Hedonic Score	
6	7.11		324	5	6.35		309
7	6.65		310	9	5.97		296
4	6.52		228	3	5.67		374
14	6.39		387	13	5.31		251
8	6.13		322	10	5.23		318
X	6.56 *		1571	2	5.07		494
				X	5.60**		2042

* Like slightly to moderately

** Neutral to like slightly

3. Equipment Status

The evaluation of food service equipment was accomplished using an experimental format that took into account the age of the equipment, its operational condition, its functional adequacy and appropriateness, and preventive maintenance schedule, or lack thereof (see Appendix B).

As indicated in Tables 10 and 12, this factor seems related to effective food service management, although two obvious exceptions are noted where a Hi Flier base received next to the lowest equipment rating, and a Lo Flier base was rated second best of all bases.

The data in Table 12 suggest that the overall status of Air Force food service equipment is less than satisfactory. Although equipment standards are yet to be determined, the 6 of 11 dining facilities with lower than 60% ratings present a strong case for the position that all is not well in the food service equipment area.

Table 12. Equipment Status Ratings for Two Groups of Air Force Bases

Hi Fliers*		Lo Fliers	
Base No.	Equipment Status Score	Base No.	Equipment Status Score
6	72%	9	70%
4	67	3	59
8	66	5	58
7	65	10	57
14	52	2	53
		13	47

* The equipment status score is expressed as a percentage of a perfect rating (100%) on the NRDC experimental equipment status form. (The form is quite long and a sample page is presented in Appendix B.)

4. Food Appearance

An experimental form was used to collect food appearance data (see Figure 5). While virtually all food service personnel queried said food appearance was an important indicator of effective management, none was able to say how this indicator should or could be rated.

During the study it was learned that high interrater reliability was possible using the food appearance form accompanied by instructions for its use. Findings reported in Table 10 support the contention that the better managers present better-looking food to the customer. The absolute values displayed in Table 13 suggest food appearance in some Air Force dining halls may have an overall negative impact on customer satisfaction.

Table 13. Mean Ratings of Food Appearance* for Two Groups of Air Force Bases

Hi Fliers		Lo Fliers	
Base No.	Mean Rating	Base No.	Mean Rating
4	4.1	9	3.4
7	3.8	5	3.2
8	3.8	3	3.1
6	3.3	13	2.9
14	2.9	2	2.6
		10	2.6

* Ratings are based on a 5 point scale (low to high)

very	somewhat	average	somewhat	very
deficient	deficient	satisfactory	attractive	attractive

5. Productivity

An attempt was made to measure the work productivity of the food service personnel at each of the bases. The task proved difficult and as a result the reliability of the findings is somewhat suspect. Food service managers do not conceptualize productivity as a function of the relationship between resources used and end product output. Reliable tools are nonexistent for routinely measuring productivity in military food service operations. Civilian contractors who supply food service attendants are reluctant to divulge information about worker-hours of labor; at one base the civil servants union (NAGE) prohibited data collection on worker input. Managers seldom consider discrepancies between scheduled worker-hours of labor and actual worker-hours spent on the job.

BASE _____

DINING FACILITY _____

FOOD APPEARANCE *

DATE _____ MEAL _____

DATA TAKER _____

OVERALL SERVING LINE	VERY DEFICIENT	SOMEWHAT DEFICIENT	AVERAGE/ SATISFACTORY	SOMEWHAT ATTRACTIVE	VERY ATTRACTIVE	
1. Lighting	1	2	3	4	5	
2. Orderliness	1	2	3	4	5	
3. Serving Line Decorations	1	2	3	4	5	
4. Food Color Combination	1	2	3	4	5	
5. Salad Bar	1	2	3	4	5	
6. Food Identifiability	1	2	3	4	5	
7. Beverage Area	1	2	3	4	5	

OVERALL SERVING LINE ATTRACTIVENESS (SUM OF CIRCLED NUMBERS)

INDIVIDUAL FOOD ITEMS (BY CATEGORIES)	10 Minutes After Opening Line					20 Minutes Before Closing Line						
ENTREES												
1	1	2	3	4	5	1	2	3	4	5		/
2	1	2	3	4	5	1	2	3	4	5		/
3	1	2	3	4	5	1	2	3	4	5		/
4	1	2	3	4	5	1	2	3	4	5		/
5	1	2	3	4	5	1	2	3	4	5		/
STARCHES											///	
1	1	2	3	4	5	1	2	3	4	5		/
2	1	2	3	4	5	1	2	3	4	5		/
3	1	2	3	4	5	1	2	3	4	5		/
4	1	2	3	4	5	1	2	3	4	5		/
VEGETABLES											///	
1	1	2	3	4	5	1	2	3	4	5		/
2	1	2	3	4	5	1	2	3	4	5		/
3	1	2	3	4	5	1	2	3	4	5		/
4	1	2	3	4	5	1	2	3	4	5		/
DESSERTS											///	
1	1	2	3	4	5	1	2	3	4	5		/
2	1	2	3	4	5	1	2	3	4	5		/
3	1	2	3	4	5	1	2	3	4	5		/
4	1	2	3	4	5	1	2	3	4	5		/
											///	

Average Appeal of Food on Serving Line

Y=

Appearance of Customer's Trays Leaving Serving Line

(1 point for each of 20 consecutive customers with well served menu items)

Total Food Appearance Score/Index X + Y + Z

* Take data at 2 breakfasts, 2 lunches and 2 dinners.

Figure 5. Food Appearance Data Collection Form

All of the above notwithstanding, data were taken at all bases studied as a first exploratory step toward designing a productivity model.* The number of meals served during a given time period was used as the output factor; the scheduled worker-hours of labor for cooks (only) was measured as the input factor. Using these data, the bases were rank-ordered as shown in Table 10.

The range of meals served per scheduled worker-hour of labor was great even though only cook worker-hours were used. The base lowest in productivity served only 5 meals per scheduled worker-hour of labor; the highest base served 21 meals per worker-hour. The median productivity level for the 11 bases was 9 meals per worker-hour of scheduled labor.

Perhaps the major value of this modest effort to measure productivity was to indicate the difficulties inherent in the identification and measurement of even the most elemental components of productivity. It is apparent that developing a valid concept of productivity assessment will be a complex and challenging undertaking.

6. Records

Accuracy and timeliness of records submission was identified by food service managers as a valid indicator of managerial effectiveness. The records factor was described for each base using the Air Force Form 249 as the principal case in point. All bases were ranked by an AFESC staff person on the basis of their error rate and timely submission of reports.

Ranking the bases on the records indicator, as shown in Table 10, indicates a positive, though only moderately strong relationship between record reporting and effective management.

7. Sanitation

Sanitation was one of the top three factors indicating effective management mentioned by food service managers. Actually, at the base level managers cited sanitation as the number one factor; command-level managers ranked sanitation as third most-valid indicator of effective management. Obviously, the prominent importance of sanitation in a food service operation cannot be disputed. Nevertheless, standards of sanitation are vague; objective criteria by which the level of sanitation in a given facility can be measured are not available to Air Force managers.

* A contract has been let to a civilian firm to design and develop a comprehensive productivity measure for use in military food service operations.

In an effort toward obtaining objectivity, a sanitation evaluation form was designed and used by the Natick R&D Center teams (see Figure 6). Results obtained from using the form suggest it is possible to achieve a high degree of interrater reliability given clear instructions and practice in using the form. This approach to sanitation assessment does not yield absolute standards, rather it can be useful in tracking a given facility over time, and in comparing facilities.

The data displayed in Table 10 suggest a substantial difference in sanitation between the Hi Flier group and the Lo Flier group as described and measured by the Natick R&D Center experimental form. However, when the data are organized to show absolute rather than relative sanitation status (shown in Figure 7), it is apparent that the overall sanitation level of the Lo Flier group is not dangerously low but simply lower than the Hi Fliers.

8. Training Status

Because of the perceived importance of training in general and due to the higher importance afforded it by food service managers, the team paid special attention to the relationship of training to food service management effectiveness.

All managers and workers were surveyed to obtain information on the courses they had taken in management and in food service operations both inside and outside the service.

The data posted in Table 14 are a combination of four sets of training data each of which can be ranked separately. The data in Column A of the table ranks bases according to the mean number of management courses taken per manager. On this factor the mean ranking of the Hi Fliers is higher than the comparable ranking of the Lo Fliers, however the difference is minimal.

The second set of data ranks the bases according to the proportion of their management personnel who have had food service management courses outside the military service. This information, found in Column B, shows a positive correlation between training and effective management, but the numbers are small and must be considered as suggestive only.

The third set of data presents the bases according to the mean number of formal courses in food service completed by food service workers. These findings, reported in Column C, show the Hi Fliers to rank higher than the Lo Fliers, although again the difference is not great.

When the nine bases which provided data are examined according to the percent of workers who have graduated from the three level (basic) course in food service at Lowry AFB, the Hi Fliers and Lo Fliers show little difference. The ranking of bases presented in Table 10 is based on a combination of the four types of data shown in Table 14.

SANITATION/CLEANLINESS/ORDERLINESS
(GENERAL APPEARANCE)
NON-EQUIPMENT

Base No. _____

Dining Facility Description Location _____

Collector _____

Dates: #1 _____

Times: #1 _____

#2 _____

#2 _____

#3 _____

#3 _____

INSTRUCTIONS:

Rate facility and personnel on 3 days at different hours, e.g., Day #1 - 0800, Day #2 - 1300, Day #3 - 1800.

1 VERY DIRTY	2 SOMEWHAT DIRTY			3 CLEAN BUT CLUTTERED	4 CLEAN AND ORDERLY	5 SPOTLESS BEAUTIFUL		
	#1	#2	#3			#1	#2	#3
Floor, dining area					Serving line counter			
Floor, Kitchen					Sneeze Guard			
Floor, serving area					Silverware			
Floor, wash area					Trays			
Tables, work					Glasses			
Tables, diner					Total Ratings _____			

WORKER APPEARANCE
(SERVERS, MESS ATTENDANTS, COOKS)

1 DIRTY/ OUT OF UNIFORM	2 DIRTY			3 CLEAN BUT UNKEMPT	4 CLEAN NEAT	5 IMMACULATE			
	1	2	3		1	2	3		
Servers: #1				Attendants: #1				Cooks: #1	
#2				#2				#2	
#3				#3				#3	
#4				#4				#4	
#5				#5				#5	
#6				#6				#6	

WEIGHTED X

Figure 6. Sanitation Data Collection Form

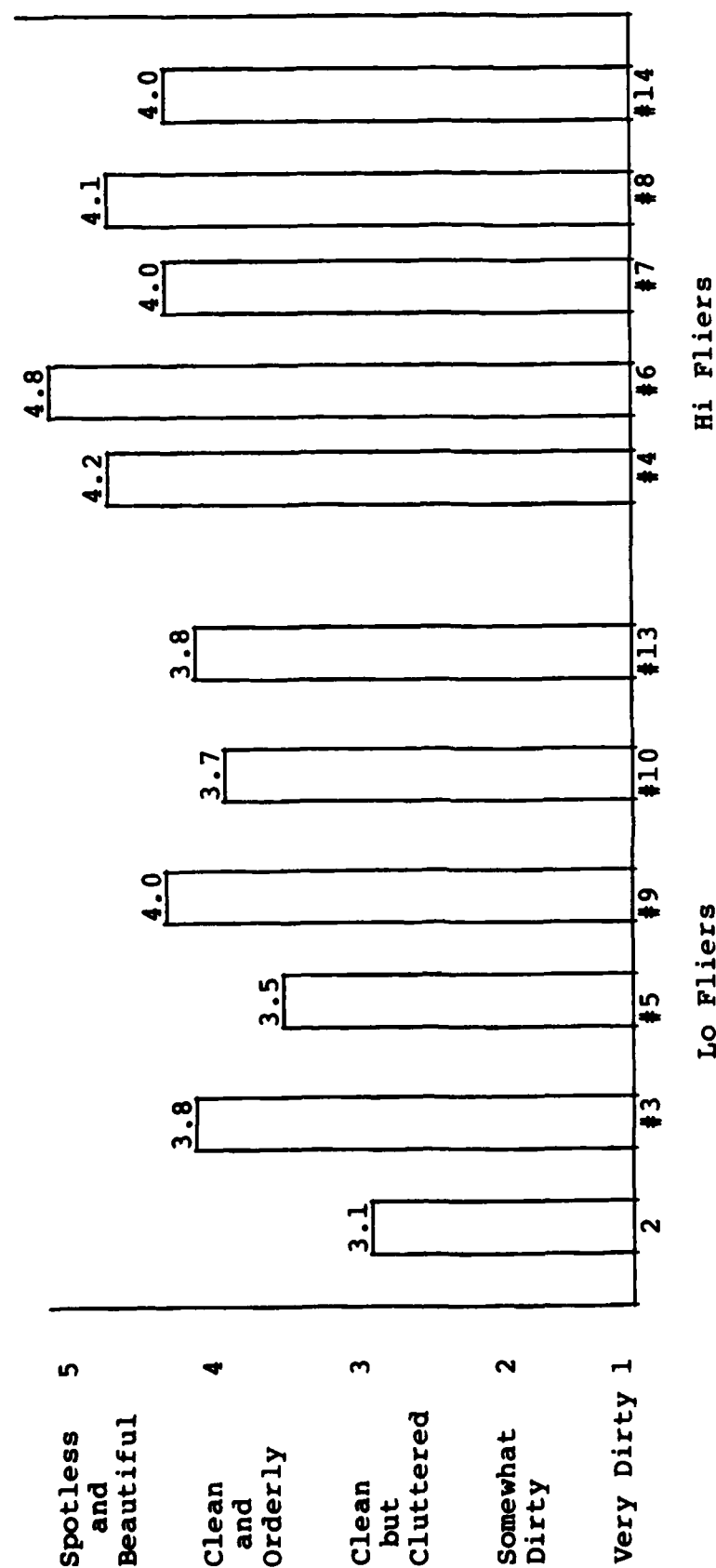


Figure 7. Mean Scores Indicating Sanitary Status of Two Groups of Air Force Dining Facilities

Table 14. Training Completed by Base Food Service Managers and Workers*

	Number of Management Courses Taken Per Manager	Percent of Management Personnel Who Have Had F/S Courses Outside the Military Service	Per Capita Number of Formal Courses in F/S Completed by F/S Worker	Percent of Workers Who Have Completed 3-level Course in F/S at Lowry
<u>H1 Fliers</u>				
Base Nos.				
4	3.75	50%	1.375	50.0%
6	2.00	25	NA	NA
7	2.60	60	2.33	33.3
8	2.20	20	2.07	26.7
14	<u>2.33</u>	<u>33</u>	<u>1.625</u>	<u>57.5</u>
MEAN	2.54	37.5%	1.71	47.1%
	(N=24)	(N=24)	(N=102)	(N=102)
<u>Lo Fliers</u>				
Base Nos.				
2	1.67	50%	NA	NA
3	1.60	0	1.50	46.2%
5	2.60	40	1.09	0.00
9	2.67	17	2.00	36.7
10	2.20	0	1.11	41.1
13	<u>2.80</u>	<u>0</u>	<u>2.10</u>	<u>61.9</u>
MEAN	2.25	18.75%	1.64	41.1%
	(N=32)	(N=82)	(N=107)	(N=107)

* The data above are derived from surveys of 56 managers including food service officers, superintendents, dining hall supervisors, shift leaders, and 209 military food service workers. Bases 6 & 2 did not make worker training data available.

Given the general consensus among food service people that inadequate training is the number one problem in the food service career field, one would expect well-managed dining facilities to be operated by highly trained managers and, conversely, poorly managed facilities to be managed by untrained managers. The training data from this study do not indicate a strong relationship between training and effective management. It will be noted, however, that the absolute level of training received by managers is low. It is conceivable that the manager groups received so little training that even the most trained of the groups were not "well-trained."

Another possible explanation of the training findings is that the training received by both managers and workers was ineffective. The data taken at the Lowry Food Service School suggest problems there which almost certainly impact negatively on the effectiveness of the training program. For example, instructors were considered poorly selected; the civilian contract operation at the school was rated low in its training function; middle management course students are not given immediate post-course assignments in management positions, and 55% of the students in the basic cook course did not choose the food service career field. Additionally, the timing of training for managers may be poor. During numerous interviews, managers said they wished they had received management training sooner.

Fewer than half of the food service worker groups surveyed received the basic preservice food service course. As with managers, the worker groups with a higher percentage of their members trained did not seem to perform at a substantially more productive level than groups with less training.

Regarding the overall subject of training impact on performance, it is important to point out that this analysis did not attempt to describe cause-effect relationships, but rather to identify associations between the various factors and management effectiveness. Training, as described in this report did not appear to be strongly associated with effective management. However, it may be that management and worker training did have a positive effect on both groups; one must know how the groups would have performed without the training to evaluate the training effect.

9. Worker Attitude

Food service workers were surveyed to learn their attitude toward their present job, supervision on the job, and co-workers. *

When the bases are compared on the worker attitude factor, the Hi Flier group is ranked higher than the Lo Fliers, as is apparent from the data in Table 10. The more positive attitudes of the workers in the Hi Flier group tend to confirm that better management yields a more satisfied and more productive workforce.

When weighted means are calculated on the single question of supervision on the job, the difference between the two groups is not great but still favors the Hi Fliers. Also, the means of the two groups are very similar to means found in a previous study of Air Force food service workers.**

Two additional key scales on the JDI used to describe worker attitudes include how workers feel about their present job and about their co-workers. Table 15 shows the mean responses of the two study groups and other Air Force workers as reported on a previous study.

* P.C. Smith, L.M. Kendall, and C.L. Hulin. The Job Description Index (JDI): The Measurement of Work Satisfaction in Work and Retirement. Chicago: Rand McNally & Co., 1969.

** J.R. Siebold, L.E. Symington; R.C. Graeber and D.L. Maas. Consumer and Worker Evaluation of Cash Food System's: Loring Air Force Base (Part I). Technical Report 76-35-FSL US Army Natick Research and Development Command Natick, MA Jan 1976 (AD A-022 121).

Table 15. Mean Responses to Three Scales of the Job Description Index by Air Force Food Service Workers

Scale Item	Hi Flier Group	Lo Flier Group	Previous Studies
Work on Present Job	$\bar{X} = 26.4$	$\bar{X} = 22.15$	$\bar{X} = 23.72$
Supervision on the Job	$\bar{X} = 38.59$	$\bar{X} = 35.73$	$\bar{X} = 38.89$
Co-Workers on the Job	$\bar{X} = 36.15$	$\bar{X} = 33.22$	$\bar{X} = 34.98$

As measured by the JDI, the Hi Flier group workers demonstrated more positive attitudes than the Lo Flier groups, and scored as high or higher than food service workers surveyed earlier at three Air Force bases. These data tend to support the belief that good management and worker attitudes are associated in a positive manner.

Summary of Findings and Recommendations

FINDING No. 1 - Training for managers was reported by food service personnel at all levels as the most pervasive and intense problem in the food service career field.

RECOMMENDATIONS - (a) An on-site training program for managers utilizing innovative methodology should be produced and tested in an Air Force dining hall (Natick R&D Center). **(b)** Food management assistance teams should give more emphasis to their function as trainers in human resource development (AFESC). **(c)** Formal military management courses should be revised to assess ways to reinforce management behavior in the work place (AFESC).

FINDING No. 2 - A significant percentage of food service managers recommend the following actions be taken at Air Force and Command levels: Review job performance criteria and standards, increase manning strength, increase formal food service school training.

RECOMMENDATION - Air Force Staff (AFESC) and the Major Command Hdqts should initiate a joint effort to address the subject tasks.

FINDING No. 3 - Managers at all levels and workers identify the shift leader as the position most in need of assistance.

RECOMMENDATION - Priority should be given to the shift leader position in the production of training modules and management tools (Natick R&D Center).

FINDING No. 4 - Base level managers report high level need for training in the areas of communications, human relations, accounting and cost control.

RECOMMENDATION - Pilot modules produced for on-site training, should emphasize training in communications, human relations, accounting and cost control (Natick R&D Center).

FINDING No. 5 - Base level managers give low ratings to assistance groups as helpers in the management development area.

RECOMMENDATION - Assistance groups including MAJCOM, FMAT, CESMET, and AFESC, should examine their current modus operandi relative to giving assistance in management development (also see Recommendation 1/(b)).

FINDING No. 6 - Food service managers at all levels rate customer satisfaction as a low fourth in order of importance as a product of effective management.

RECOMMENDATION - More emphasis should be given to customer satisfaction as an indicator of successful management. A single customer feedback system should be developed that would be easy to operate and provide feedback on a regular basis to food service managers (Natick R&D Center). This would be in addition to the various methods of informal customer feedback currently used in Air Force food service.

FINDING No. 7 - Recognition of system productivity as a managerial responsibility was not viewed by food service managers as an important area of concern for them.

RECOMMENDATION - Productivity should be addressed in assistance communications going to food service managers; training courses should emphasize productivity and how to promote it; food service operations should be rewarded for improved productivity (Natick R&D Center and AFESC).

FINDING No. 8 - A high percentage of food service workers reported managerial respect for cooks' suggestions as the most effective motivator of 16 motivative factors listed on a questionnaire; awards for good performance, written commendations from sponsors, and words of appreciation were also rated high.

RECOMMENDATION - Management training programs should emphasize the importance and generic methods of worker behavior reinforcement and practical instructions on how to do it (Natick R&D Center and AFESC).

FINDING No. 9 - The role of the food service officer is not well understood by other food service management people, and by several of the military food service officers interviewed. A majority of managers interviewed (55%) said there was no need for a food service officer if a superintendent was assigned; 44% of the officers said they were not prepared by experience or training to be food service officers.

RECOMMENDATIONS - Training for military food service officers needs to be reevaluated; the role, responsibilities, and work relationships of the officer need to be clarified and communicated to the entire workforce (AFESC and Lowry).

FINDING No. 10 - Among all managers and food service workers interviewed/surveyed, only the food service officers rated the Hennessey Award as a high motivator of the workforce.

RECOMMENDATION - Given the large investment of resources in the Hennessey Award, the importance and benefits of the Award should be communicated to the workforce (AFESC).

FINDING NO. 11 - Communication between management and the workforce is recognized by food service people at all levels as the most important factor in effective management (see Table 9).

RECOMMENDATION - Training in communications skills should be given high priority in formal courses and an on-site short course in communications should be produced and tested.

FINDING No. 12 - Food service workers are given overseas assignments without adequate preparation. Overseas managers report their workforce is poorly equipped to deal with the different overseas problems, yet at the Lowry basic course 50% of the 53 students received overseas assignments.

RECOMMENDATION - Food service personnel should have work experience before being assigned overseas; a special orientation, including a language instruction module for overseas assigned personnel should be considered (AFESC and AFMPC).

FINDING No. 13 - The short duration of the overseas tour works against effective management according to participants in overseas workshops.

RECOMMENDATION - Considerations should be given to extending the overseas tour. The longer tour would have to be combined with intermittent CONUS leave (AFESC and AFMPC).

FINDING No. 14 - Overseas food service managers feel strongly that OJT and apprenticeships should be brought to the overseas theaters.

RECOMMENDATIONS - Training programs for overseas managers should be developed and tested in the overseas environment. These programs could best be distributed and monitored by assistance teams.

FINDING No. 15 - Nine factors were studied and found, in varying degrees, to relate positively with effective management.

RECOMMENDATION - Factors found in association with effective management should be combined as a Management Effectiveness Index. This will require certain refinements in the instruments used to describe the factors and further analysis requisite to proper factor weighting and index validation. Additional innovative management tools should be designed, produced and tested, including a productivity measure for food service; training modules; an equipment inspection/use system for food service personnel; a customer feedback system, and other tools as the need is identified (Natick R&D Center and AFESC).

Projected Strategy For The Future

A Model Dining Service (MODS) program will be accomplished at an Air Force base under the follow-on project to this analysis. The MODS will enable the testing of various innovative training and other management development strategies and tactics in an operating dining facility.

The MODS will serve also as a site to demonstrate management/training procedures found to be successful and/or promising. It will, in short, serve as a model for Air Force food service personnel from other bases; it will allow the efficient use of R&D resources, and will promote pride in the food service career field.

APPENDIXES

- A. A Modified Edition of the US Air Force
Evaluation and Standards Form for
Dining Facilities
- B. A Sample Page of the Natick Research
and Development Center Dining Facility
Equipment Status Form

APPENDIX A

A Modified Edition of the US Air Force Evaluation and Standards Form For Dining Facilities

DATA COLLECTION AIR FORCE FOOD SERVICE MANAGEMENT (MSR AF 83-19) Section 1 - Introduction

This form has 11 additional sections that are to be used to collect data relative to the physical aspects of dining facilities. It has been adapted from Food Service Letter (FSL) 81-8, 24 Sep 81, Evaluation and Standards for USAF Dining Facilities. Not all the standards are mandatory. However, all are desirable.

The rating scale is 1 to 5 with the verbal anchors below. Place an X in the appropriate box to indicate the rating. Rate all factors as you find them, that is, do not anticipate future demands or requirements or use historical data.

Scale:

Nonexistent	1
Marginal	2
Substandard	3
Meets Standard	4
Exceeds Standard	5

BASE NO.:

FACILITY IDENTIFICATION:

COLLECTOR'S NAME:

DATE:

TOTAL POINTS:

APPENDIX A (Continued)

SECTION 2 - OUTSIDE AREAS

Outside areas include all immediate areas exterior to the dining facility. Before a patron even enters the dining facility, the patron's opinions of the facility are beginning to form. The patron must feel welcome. The facility from the outside must be well identified and attractive and be convenient for use by the patrons.

1. **Parking Areas:**

- | | | | | | |
|---|---|---|---|---|---|
| a. The patron parking lot will be a paved area and located no more than 200 yards from the dining facility. | 1 | 2 | 3 | 4 | 5 |
| b. The food service operating personnel parking lot will be a paved area and located adjacent to the dining facility. | 1 | 2 | 3 | 4 | 5 |
| 2. The outside area of the facility will be well-lighted in both the front and back. | 1 | 2 | 3 | 4 | 5 |
| 3. Walks should be paved from parking lots and dormitories to the dining facility. | 1 | 2 | 3 | 4 | 5 |
| 4. Identification Signs: Name of facility and meal hours should be posted for diners. Appearance should be compatible with related areas. | 1 | 2 | 3 | 4 | 5 |

SECTION 3 - PATRON ENTRANCE AREAS

Entrance Areas include entrance foyers and hallways, patron restrooms, sign-in areas, and all other areas the patron will pass upon entering the front door before reaching the serving areas. The patron will benefit from some good impressions upon making his/her way to the serving line. The patron will follow an attractive route from the front door, to the serving line with a minimum amount of cross traffic.

- | | | | | | |
|---|---|---|---|---|---|
| 1. Entrance doors will be in good repair, have panic hardware, security locks and automatic door closing devices. | 1 | 2 | 3 | 4 | 5 |
| 2. Foyers: | | | | | |
| a. The entrance will have a vestibule to block wind and insects. | 1 | 2 | 3 | 4 | 5 |
| b. The minimum acceptable flooring and asphalt tile. | 1 | 2 | 3 | 4 | 5 |
| c. The minimum acceptable wall finish is gypsum board and the decor will complement the dining area. | 1 | 2 | 3 | 4 | 5 |

APPENDIX A (CONTINUED)

3. Cashier Area and Lobby:
 - a. Decor will be consistent with adjacent areas. 1 2 3 4 5
 - b. All utilities should be concealed. 1 2 3 4 5
 - c. The cashier stand should be well-lighted 1 2 3 4 5
and constructed to complement the decor of
the facility.
 - d. The minimum acceptable floor in this area is 1 2 3 4 5
asphalt tile.
 - e. The minimum acceptable wall finish is gypsum 1 2 3 4 5
board.
4. Customer Restrooms:
 - a. Separate restrooms will be provided for male 1 2 3 4 5
and female patrons.
 - b. Floors will be constructed of ceramic tile. 1 2 3 4 5
 - c. The walls will be ceramic tile and the 1 2 3 4 5
ceiling should be painted.
5. The menu and the meal prices will be posted in 1 2 3 4 5
a metal frame with glass locking doors.
6. The flow of patrons through the front door (main 1 2 3 4 5
entrance) to the serving line should be efficient
with a minimum amount of cross traffic.

SECTION 4 - SERVING AREAS

The serving areas are all areas where patrons receive meal components. This includes salad bars, hot food wells, pastry case and beverage counters. These are where the patrons get the first taste of the food with their eyes as it is displayed in attractive surroundings. The patrons move through the line at a steady pace selecting their meal in a logical sequence. Also included in the serving area is the area behind the serving line where the employees serve and store the food. This area is designed so that it is not cumbersome or awkward for employees to perform their tasks of setting up the line, serving the food, backing the line, or breaking down and cleaning the line.

1. Food Service Serving:
 - a. Floors: The floors in this area should be 1 2 3 4 5
quarry tile and sloped to drains.
 - b. Drainage: Drains are needed in the serving 1 2 3 4 5
line area for good sanitation.
 - c. Walls: The walls in this area will be 1 2 3 4 5
wainscotted or full height with ceramic tile.
 - d. Division from Other Areas: Dividers will be 1 2 3 4 5
designed to block the view of the dining
room from the patrons going through the
serving line.
 - e. Ceiling: The ceiling in this area should be 1 2 3 4 5
smooth for easy cleaning and lights should
be recessed.

APPENDIX A (CONTINUED)

- | | | | | | |
|---|---|---|---|---|---|
| 2. Ventilation: | | | | | |
| a. Exhaust hoods over cooking equipment will have fire protection systems within the hood. | 1 | 2 | 3 | 4 | 5 |
| 3. Serving line with slide rails and protector cases as required. | 1 | 2 | 3 | 4 | 5 |
| 4. Power and Utilities: | | | | | |
| a. Utilities will be in good condition (no leaks in water lines, clogged drains, frayed or inadequate extension cords on power lines etc). | 1 | 2 | 3 | 4 | 5 |
| b. All utilities should be concealed where possible. | 1 | 2 | 3 | 4 | 5 |
| 5. Sound Control: Doorway between the kitchen and serving line will have a baffle wall (a second blind wall in kitchen area), or doors should be installed. | 1 | 2 | 3 | 4 | 5 |
| 6. Customer Service Area: Patron side of serving line: | | | | | |
| a. Floors will be quarry tile. | 1 | 2 | 3 | 4 | 5 |
| b. Minimum acceptable wall is gypsum board. | 1 | 2 | 3 | 4 | 5 |
| c. Ceiling could be acoustic tile. | 1 | 2 | 3 | 4 | 5 |
| d. Music should be piped into this area with sufficient speakers for sound control. | 1 | 2 | 3 | 4 | 5 |
| e. The flow coming from the entrance to the serving line will be direct and not through the dining area. | 1 | 2 | 3 | 4 | 5 |
| f. Salad bars will contain protector cases for proper sanitation. | 1 | 2 | 3 | 4 | 5 |
| g. The beverage area will be located at the end of the serving line or be in a section by itself. | 1 | 2 | 3 | 4 | 5 |
| h. This area will have slide rails and equipment items arranged with the traffic flow, e.g., glasses before the drinking dispensers and cups before the coffee maker. | 1 | 2 | 3 | 4 | 5 |
| i. An area should be set aside at the end of the serving line or in the drink dispensing area for condiments. | 1 | 2 | 3 | 4 | 5 |

SECTION 5 - DINING AREAS

The dining area includes all of that area where the patrons consume their meal. An attractive decor and careful layout of seating areas will make this area a pleasant place to dine. Unsightly scenes and distractive noises from other areas of the facility should be screened.

- | | | | | | |
|---|---|---|---|---|---|
| 1. Decor: | | | | | |
| a. Walls will be constructed and designed to match the decor intended for the dining room area. | 1 | 2 | 3 | 4 | 5 |
| b. The floor should be covered with carpet. | 1 | 2 | 3 | 4 | 5 |
| c. The ceiling should be acoustic tile. All utilities are to be concealed. | 1 | 2 | 3 | 4 | 5 |
| d. The drapes will be coordinated with the dining room decor. | 1 | 2 | 3 | 4 | 5 |

APPENDIX A (CONTINUED)

- | | | | | | |
|--|---|---|---|---|---|
| e. Lighting fixtures will be consistent with the decor. Recessed, direct, indirect or chandelier lighting should be controlled by a rheostat. | 1 | 2 | 3 | 4 | 5 |
| 2. The wall finishes will be painted, vinyl covered, paneled, tile, etc. to best match the decor. | 1 | 2 | 3 | 4 | 5 |
| 3. Privacy: Partitions serve three basic functions in a dining facility. They provide visual privacy for customers, separate traffic flow, and provide noise control. Decorative screens or panels would be appropriate. They should be free standing and moveable to facilitate rearrangement within the dining area. | 1 | 2 | 3 | 4 | 5 |
| 4. Tables and chairs will be solid, durable and match the decor. | 1 | 2 | 3 | 4 | 5 |
| 5. Dining areas should have background music for patron pleasure and to mask objectionable sounds. | 1 | 2 | 3 | 4 | 5 |
| 6. Bussing: The only bussing acceptable for an Air Force dining hall will consist of the complete tray being removed from the table and carried to the dish room or the complete tray with soiled dishes put into closed bussing carts and wheeled into the dishroom. Conveyor belts will also be acceptable. No other methods, such as bussing carts with open garbage, will be acceptable. | 1 | 2 | 3 | 4 | 5 |

SECTION 6 - WAREWASHING AREA

It is the dishwashing room and associated areas where soiled dishes and utensils are scraped and prepared for washing and where clean dishes are stored. The dishwashing area allows employees to perform their tasks efficiently without possible contamination of clean wares.

- | | | | | | |
|--|---|---|---|---|---|
| 1. Separation from Dining Areas/Kitchens: A separate room for the dishwashing machine and the process of warewashing is required. | 1 | 2 | 3 | 4 | 5 |
| 2. Noise Control: An area partitioned from the dining room is required to sort soiled dishes and baffle the noise made by the machine. | 1 | 2 | 3 | 4 | 5 |
| 3. Ventilation: Adequate ventilation is required in the dishwashing room to ensure removal of water vapor and to prevent condensation of water on walls and ceiling. | 1 | 2 | 3 | 4 | 5 |
| 4. Walls and Floors: Walls and floors in this area should be quarry tile. | 1 | 2 | 3 | 4 | 5 |
| 5. Lighting: Sealed vapor-proof recessed lighting is required for this area. | 1 | 2 | 3 | 4 | 5 |
| 6. Drainage: Adequate drainage is required. | 1 | 2 | 3 | 4 | 5 |
| 7. Storage Parking Area for Carts: All dishes and utensil items should be loaded into self-leveling dispensers. Storage behind the serving line and in the dishwashing room is required. The storage size depends on the number of diners. | 1 | 2 | 3 | 4 | 5 |

APPENDIX A (CONTINUED)

8. Equipment:
- | | | | | | |
|--|---|---|---|---|---|
| a. Separate clean and soiled dish tables are required. | 1 | 2 | 3 | 4 | 5 |
| b. A prewash sink with prewash hose unit is required. | 1 | 2 | 3 | 4 | 5 |
| c. A silver soak sink is required. | 1 | 2 | 3 | 4 | 5 |
| e. A garbage disposal unit should be built into the soiled dish table. | 1 | 2 | 3 | 4 | 5 |

SECTION 7 - RECEIVING AND STORAGE AREAS

Dining facilities must have areas for storage of perishable and nonperishable foods and storage of operational and cleaning supplies. Storage areas must be of sufficient size for their intended purpose and must be kept in clean, orderly manner.

- | | | | | | |
|---|---|---|---|---|---|
| 1. Expendable Supply Storage: | | | | | |
| a. Adequate expendable supply storage is required and will be separate from the food storage area. | 1 | 2 | 3 | 4 | 5 |
| b. The minimum acceptable wall materials are gypsum board or concrete masonry. | 1 | 2 | 3 | 4 | 5 |
| c. Adequate lighting is required. | | | | | |
| 2. Subsistence Dry Storage: | | | | | |
| a. An adequate subsistence dry storage room is required. | 1 | 2 | 3 | 4 | 5 |
| b. An office space will be within this area for the storeroom clerk. | 1 | 2 | 3 | 4 | 5 |
| c. The minimum acceptable walls are gypsum board or painted, concrete masonry. | 1 | 2 | 3 | 4 | 5 |
| d. Adequate lighting is required for record keeping. | 1 | 2 | 3 | 4 | 5 |
| 3. Dunnage Racks and Shelving: Shelving will be made of stainless steel and shelves will be adjustable. | 1 | 2 | 3 | 4 | 5 |
| 4. Ventilation/Temperature Control: Proper temperature control and ventilation is required. | 1 | 2 | 3 | 4 | 5 |
| 5. Cold Storage: | | | | | |
| a. A freezer (0°F or lower) of sufficient capacity for the size of the facility is required. | 1 | 2 | 3 | 4 | 5 |
| b. Adequate refrigeration (28°F to 40°F) for thawing is required. | 1 | 2 | 3 | 4 | 5 |
| c. A dairy refrigerator (30°F to 40°F) of sufficient capacity for the size of the facility is required. | | | | | |
| d. A fruit and produce refrigerator (30°F to 40°F) of sufficient capacity for the size of the facility is required. | 1 | 2 | 3 | 4 | 5 |
| e. A cooks' refrigerator (30°F to 40°F) for working supplies is required. | 1 | 2 | 3 | 4 | 5 |

APPENDIX A (CONTINUED)

- | | | | | | |
|--|---|---|---|---|---|
| f. Lighting in all refrigeration will be vapor proof and have a protective shield. | 1 | 2 | 3 | 4 | 5 |
| g. Shelving will be made of stainless steel and the shelves will be adjustable. | 1 | 2 | 3 | 4 | 5 |
| h. Security locks on walk-in refrigeration units which can be opened from the inside are required. | 1 | 2 | 3 | 4 | 5 |

SECTION 8 - FOOD PREPARATION AREAS

Food preparation areas include all areas where food production is accomplished. These include, but are not limited to: inflight kitchens, pastry kitchens, salad preparation areas, and dining hall kitchens. It is essential that food preparation areas be designed for areas of cleaning and efficiency of operation. It is imperative that the necessary safety features be incorporated into food preparation areas for the safety and comfort of all food service workers.

- | | | | | | |
|---|---|---|---|---|---|
| 1. Floors/Ceiling and Walls: | | | | | |
| a. The floor will be constructed of non-slip quarry tile or equal and have adequate drains. The floor will be sloped to each drain for easy cleaning. | 1 | 2 | 3 | 4 | 5 |
| b. Exposed structural material and utilities are not acceptable. | 1 | 2 | 3 | 4 | 5 |
| c. The ceiling should be of smooth construction with recessed lighting to provide for easy cleaning. | 1 | 2 | 3 | 4 | 5 |
| d. The walls will be wainscotted or full height with ceramic tile, or glazed structural units. | 1 | 2 | 3 | 4 | 5 |
| 2. Ventilation: Hoods will be equipped with fire protection systems. | 1 | 2 | 3 | 4 | 5 |
| 3. Equipment: | | | | | |
| a. Equipment will be up to date. | 1 | 2 | 3 | 4 | 5 |
| b. Space is needed between fixed equipment for good sanitation. | 1 | 2 | 3 | 4 | 5 |
| 4. Utilities: | | | | | |
| a. Utilities will be in good condition (no leaks or clogged drains). | 1 | 2 | 3 | 4 | 5 |
| b. Drainage is required. | | | | | |
| c. All utilities should be concealed when possible. | 1 | 2 | 3 | 4 | 5 |
| d. The kitchen will have hot water. | 1 | 2 | 3 | 4 | 5 |
| 5. Ventilation: All exhaust hoods over grease cooking equipment will have fire protection systems within the hood. | | | | | |

SECTION 9 - POT AND PAN WASHING AREAS

The pot and pan area includes that portion of a dining facility where soiled pots and pans are prepared for cleaning, cleaned, sanitized and stored. This area should be designed to allow food service workers to perform their tasks efficiently without possible contamination of clean pots and pans.

APPENDIX A (CONTINUED)

- | | | | | | |
|---|---|---|---|---|---|
| 1. The pot and pan washing area should be separate from the food preparation area. | 1 | 2 | 3 | 4 | 5 |
| 2. Floors/Ceiling and Walls: | | | | | |
| a. The floor will be constructed of quarry tile and sloped to the drain. | 1 | 2 | 3 | 4 | 5 |
| b. The ceiling should be of smooth construction with recessed lighting. | 1 | 2 | 3 | 4 | 5 |
| c. The walls will be ceramic tile or glazed structural units. | 1 | 2 | 3 | 4 | 5 |
| d. Exposed structure and utilities will be covered by a closed ceiling when possible. | 1 | 2 | 3 | 4 | 5 |
| 3. Utilities: | | | | | |
| a. Utilities will be in good condition (no leaks or clogged drains). | 1 | 2 | 3 | 4 | 5 |
| b. Drainage is required. | | | | | |
| c. The pot and pan washing area will have hot water. | 1 | 2 | 3 | 4 | 5 |
| 4. Equipment: | | | | | |
| a. A three-compartment pot and pan sink with drainboard with a garbage disposal is required in this area. | 1 | 2 | 3 | 4 | 5 |
| b. Sufficient stainless steel shelving for storage of clean pots and pans is required. | 1 | 2 | 3 | 4 | 5 |

SECTION 10 - REFUSE AND BACK DOOR AREAS

This area will include receiving docks, can washing and storage areas, mop and broom racks, refrigerated garbage rooms, dumpsters and external storage areas. Construction of these areas must allow for ease of cleaning to prevent the attraction of rodents and insects.

- | | | | | | |
|---|---|---|---|---|---|
| 1. Delivery Access: | | | | | |
| a. The off-loading dock will be of concrete construction and located in an area with good access to a street. | 1 | 2 | 3 | 4 | 5 |
| b. The access road will be paved. | 1 | 2 | 3 | 4 | 5 |
| 2. Lighting: Security lighting is required in this area. | 1 | 2 | 3 | 4 | 5 |

APPENDIX B

A Sample Page of the Natick R&D Center Dining Facility Equipment Status Form

BASE NO.:
DINING FACILITY:
B.U.C. NO.: CAPACITY:
NO. 7:
DATA COLLECTOR:

1.F.1210,
(5) - Highest rating
(0) - Lowest rating
OP - Operational Mode
NOP - Non-Operational Mode
MI - No Deficiency
VD - With Deficiency

DINING FACILITY EQUIPMENT STATUS

NO.	ITEM	Operative MI (5)	OPERATIONAL RATINGS		Unit Age in Yrs. (5)	MAINTENANCE - RATINGS				SAFETY		Preventive Maintenance		POINTS	REMARKS	
			Available Parts (3)	Ordering Parts (0)		Build-up (1)	Repair (1)	Other (1)	Build-up (1)	Repair (1)	Other (1)	Local (1)	Surf (1)			Yes (1)
KITCHEN / COOKING																
1	Fryer, Deep-Fat															
	f1															
	f2															
	f3															
	f4															
2	Griddle															
	f1															
	f2															
	f3															
	f4															
	f5															
	f6															
3	Hood, Exhaust w/Grease Auto washdown system															
	f1															
	f2															
	f3															
	f4															
4	Filter, Cooking Grease, Mobile															
5	Range, 3-Hot - Platen															
6	Range, Griddle															
7	Pan, Frying/Braising Tilting															
	f1															
	f2															
8	Oven Baking & Roasting Convection															
	f1															
	f2															
	f3															
14	MAX OVEN															
15	MICROWAVE OVEN															

SUPPLEMENTARY

INFORMATION

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FOOD SERVICE		DINING FACILITIES		MANAGEMENT EFFECTIVENESS	
MANAGEMENT		MOTIVATION		AIR FORCE	
CONSUMER ACCEPTANCE		QUALITY			
PERSONNEL MANAGEMENT		SENSORY EVALUATION			
TRAINING		MANAGEMENT PLANNING AND CONTROL			
20. ABSTRACT (Continue on reverse side if necessary and identify by block number)					
A three-phase technical approach was planned to meet an Air Force requirement to improve food service management effectiveness; this report details Phase I during which an extensive analysis of Air Force food service management was accomplished and recommendations were made to improve management effectiveness. Inadequate training for managers was identified as a principal deficiency in management preparation; management assistance groups were found lacking; operational productivity was not assessed. Factors found to be highly associated with effective management were: customer satisfaction, building and facility					

Preface

The data which went into this report on Air Force food service were furnished by the Air Force Representative AF 82-5, Food Service Management of the 803 Food Management Group, and were made possible by a successful team effort. Direction and coordination were provided by the Directorate of Systems Analysis and Concept Development (DSACD), and essential expertise and support were provided by the Technical Service Division of the Science and Advanced Technology Laboratory (SATL), both of the Natick Research and Development Center. Personnel from the Food Management Branch of the Housing and Services Division of the Air Force Engineering and Services Center (AFESC) at Tyndall Air Force Base, FL, also contributed significantly to the project. Further, Air Base personnel led by their various Major Command Headquarters cooperated completely with the R&D effort.

Indeed, Air Force personnel of the food service career field deserve the highest commendation for their professional approach to self-analysis and development. The cooks and supervisors with whom the project team worked personified the high personal and technical characteristics which engender enthusiasm and confidence. The food service group earned the respect and support of all who participated in this study.

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Mr. Joseph Wall of the DSACD, who voluntarily brought his substantial food service expertise to the project.

Mr. Hank Dylla, the AFESC Project Officer on the study, who gave his support and material assistance to the effort.

Mr. Robert T. O'Brien of DSACD, who helped edit and get this report to final publication.

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